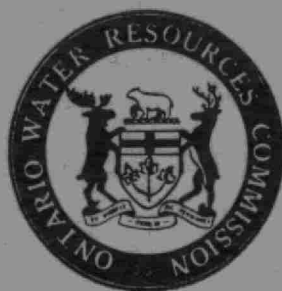


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THE  
ONTARIO WATER RESOURCES  
COMMISSION

WATER POLLUTION SURVEY

of the

IMPROVEMENT DISTRICT OF RED ROCK

DISTRICT OF THUNDER BAY

1964

IMPROVEMENT DISTRICT OF  
RED ROCK - 1964  
DISTRICT OF THUNDER BAY

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R E P O R T

on a

WATER POLLUTION SURVEY

of the

IMPROVEMENT DISTRICT OF RED ROCK

District of Thunder Bay

September 24, 1964

Division of Sanitary Engineering

REPORT

ONTARIO WATER RESOURCES COMMISSION

INTRODUCTION

A water pollution survey was conducted in the Improvement District of Red Rock on September 24, 1964. Mr.F.C. Tomes, Superintendent of Municipal Works, provided information pertinent to the survey. Mr.H.F. Wright and Mr.F.T. Davison, Public Health Inspectors, Port Arthur and District Health Unit, assisted in the survey and the sampling programme.

GENERAL

The Improvement District of Red Rock with a 1963 assessed population of 1,861, (1964 Municipal Directory) is located on the north-west shore of Nipigon Bay, a water area of Lake Superior. The municipality was founded and developed as a townsite by the St. Lawrence Corporation Limited paper milling company, (now Domtar Newsprint Limited).

The town is serviced by a sanitary sewer system and a street drain or storm sewer system. Natural drainage flow direction is towards the north-east with discharge into Nipigon Bay. A land section to the north of the built-up town area drains into Trout Creek, which is a tributary to Nipigon Bay.

All sewage and waste collected in the sanitary sewer system throughout the town is channelled to a point on the paper mill site where it joins with waste from the mill operation and discharges through

a common outfall into Nipigon Bay. No treatment is provided for the sanitary sewage or industrial wastes.

An Ontario Water Resources Commission Industrial Waste Report, dated September 1964, reviews the treatment and disposal of processing wastes from the paper mill operation.

The purpose of this water pollution survey is to determine the quality of water being discharged into Nipigon Bay from the municipal surface-water drains, street drains, storm sewers and sanitary sewage collector sewer.

#### WATER QUALITY ANALYSES

Water samples were collected, where possible, from the flow at the outfall of each of the drains.

The sanitary chemical analyses and bacteriological examinations of such samples are listed in Table I.

The locations of sampling points are designated on the accompanying plan.

#### INTERPRETATION OF LABORATORY ANALYSES

For convenience in the interpretation of laboratory analyses, the Ontario Water Resources Commission water quality objectives for discharges from surface-water drains are listed.

5-Day BOD (Biochemical Oxygen Demand)

- not greater than 15 parts per million (ppm)

Suspended Solids

- not greater than 15 parts per million (ppm)

Coliform Count - M.P.N. (Most Probable Number)

- not greater than 2,400 per 100 cubic centimeters (c.c.)

Anionic Detergents as ABS

- The presence of anionic detergent in water samples is an indication of pollution from domestic sources.

#### SIGNIFICANCE OF LABORATORY ANALYSES

The sanitary chemical and bacteriological analyses of all samples examined, with the exception of sample number 1, showed results conforming to the Ontario Water Resources Commission water quality objectives. This is therefore an indication that the surface-water drains are relatively free of contamination, and that polluting wastes are not being discharged to these drains.

The laboratory analyses of samples collected from the outfall (Sample No. 1) of the combined waste from the paper mill operation, and sewage and other wastes from the town, however, are greatly in excess of the recommended objectives. This discharge is therefore considered to be a major source of pollution to Nipigon Bay.

The excessively high BOD, anionic detergent content, and coliform count, indicate that sanitary sewage and domestic wastes are polluting materials.

The abatement, and necessity for control of pollution in Nipigon Bay is obvious for many reasons. Possibly one of the foremost reasons for such control is the need to maintain and ensure a safe and potable municipal water supply.

In order to institute a pollution abatement programme it is therefore deemed necessary that adequate treatment be provided for processing wastes from the paper mill operation, and for sanitary sewage and domestic wastes.

#### SUMMARY

A water pollution survey was conducted in the Improvement District of Red Rock on September 24, 1964.

The laboratory analyses of five of the six municipal drains investigated, indicated satisfactory water quality conditions at the time of inspection.

The laboratory analyses of the discharge from one drain (Sample No. 1) showed results greatly in excess of the OWRC objectives. This drain is purported to discharge waste from the paper mill operation, and also sanitary sewage and domestic wastes collected from the town areas. The excessively high BOD, anionic detergent content, and coliform count, indicate that domestic sewage is probably a polluting material.

#### RECOMMENDATIONS

In consideration of the matters dealt with in this report, it is recommended that:

1. Processing wastes from the Domtar Newsprint Limited paper mill operation be adequately treated prior to discharge into Nipigon Bay.

2. The discharge of untreated sanitary sewage and other domestic wastes into Nipigon Bay be discontinued. This action will require the provision of an adequate method for sewage treatment.

All of which is respectfully submitted,

District Engineer

  
C.E. McIntyre.

Approved by

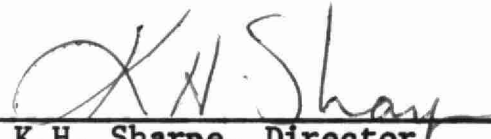
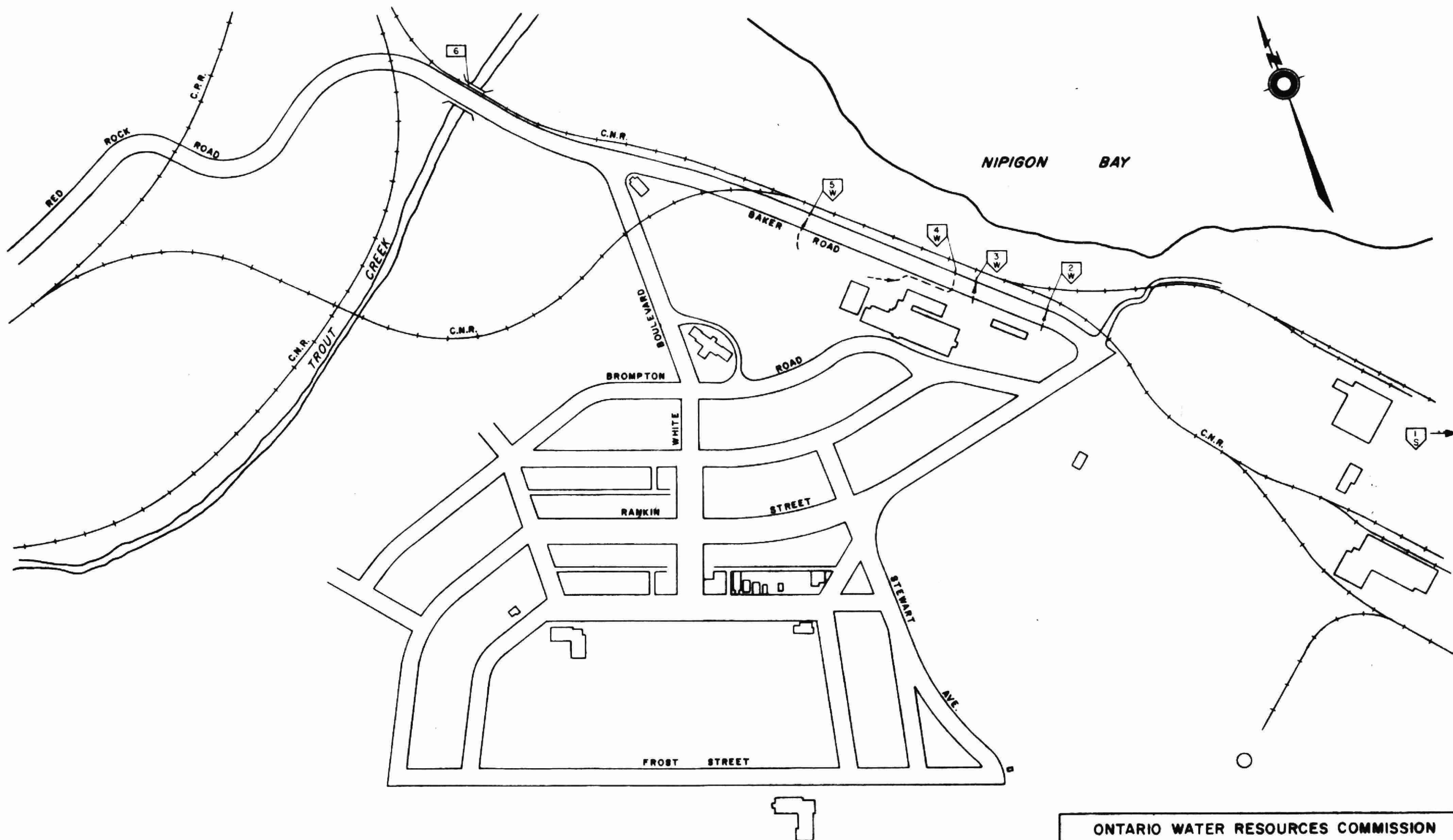
  
K.H. Sharpe, Director.

TABLE I

IMPROVEMENT DISTRICT OF RED ROCK - WATER POLLUTION SURVEY

LABORATORY ANALYSES OF DRAIN DISCHARGES

<u>Sample Number</u>	<u>Locations of Sampling Points</u>	<u>5-Day BOD (ppm)</u>	<u>Total (ppm)</u>	<u>SOLIDS Susp. (ppm)</u>	<u>Diss. (ppm)</u>	<u>Anionic Detergents as ABS (ppm)</u>	<u>Coliform Count per 100 c.c. M.P.N.</u>
	<u>OUTFALLS TO NIPIGON BAY</u>						
1.S	Mill Site (combined effluent).	190.0	1,118	340	778	4.5	1,200,000
2.W	Baker Road (opposite Imperial Oil Co. Station).	4.4	432	24	408	0.0	930
3.W	Baker Road (east of Community Centre).	1.5	246	4	242	0.0	2,300
4.W	Baker Road (west of Community Centre-from Swimming Pool area).	0.2	320	21	299	0.0	750
5.W	North of Baker Road-(from playground area).	1.2	536	36	500	0.0	690
6	Trout Creek (at Baker Road Bridge).	0.9	164	15	149	0.0	2,300



# **LEGEND**

6 - STREAM SAMPLING POINT

5 - OUTFALL  
W - TYPE OF OUTFALL

## **OUTFALL SYMBOL LETTERS**

W - STORM SEWER OR DITCH  
S - SANITARY SEWER

**ONTARIO WATER RESOURCES COMMISSION**

**IMPROVEMENT DISTRICT OF RED ROCK**

**WATER POLLUTION SURVEY**

SCALE: 1" = 400'

DRAWN BY: A.R.S.

DATE: FEB., 1965

CHECKED BY:

DRAWING NO: 65-27